

Improving Safety through South Carolina's Intersection Safety Implementation Plan (ISIP)

Introduction

In 2007, the South Carolina Department of Transportation (SCDOT) released its Strategic Highway Safety Plan¹ (SHSP) and included intersections as an emphasis area. To assist South Carolina with its efforts on the intersection emphasis area, the Federal Highway Administration (FHWA) provided technical assistance to SCDOT in the spring of 2008 that included the development of its Intersection Safety Implementation Plan (ISIP). FHWA held a workshop, provided a data package, and identified a list of candidate intersections by countermeasure type in the summer of 2008. The latest SHSP (published in March 2015) continues the commitment to improve intersection safety, once again including intersections as an emphasis area.

Process and Results

After the completion of the 2007 SHSP, engineering improvements to highway safety targeting high-crash intersections and roadway corridors produced positive results. SCDOT implemented a number of intersection improvements in the State consisting of low-cost safety treatments, such as signing, pavement markings, LED signal indications, and backplates with retroreflective borders on traffic signal heads. SCDOT also used higher-cost countermeasures—such as realignments, turn lanes, and roundabouts—at high-crash intersections. The early success with the low-cost safety treatments provided the State with confidence to go forward with a wide-scale implementation.

Since then, SCDOT has completed three statewide contracts to improve signs and pavement markings and deploy signal enhancements at approximately 2,200 intersections as of December 2014. The improvements are consistent with those identified in the ISIP. In an effort to accelerate the project and reduce costs, the State eliminated several construction items that added time and cost to complete. Therefore, any improvements requiring more substantial construction, such as pedestrian ramps at intersections and splitter islands, were not included in this contract. More information on this project is available at [South Carolina Case Study: Systematic Intersection Improvements](#).

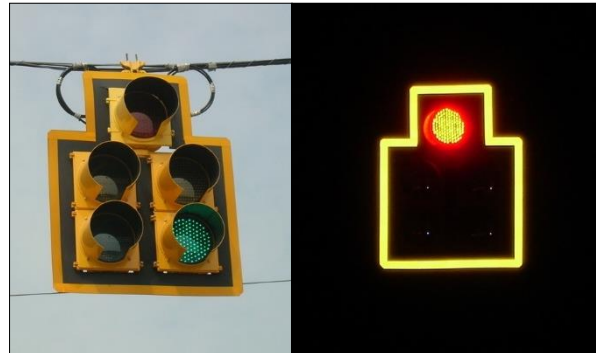


Advance Signal Ahead warning sign with cross street name.
Source: SCDOT.

¹ SCDOT. 2015. *Strategic Highway Safety Plan*. http://www.scdps.gov/docs/Target%20Zero_Final_w_Signatures_15APR15.pdf. South Carolina Department of Transportation, Columbia, South Carolina.

In addition, J-turn configurations (in which vehicles are prohibited from turning left from the minor-road approach and instead must turn right and make a downstream U-turn) are also being implemented statewide at divided-road intersections. There are currently 10 such projects that are either complete or under design.

South Carolina has adopted new standards and policies for all intersection projects based on ISIP-related implementation. This includes the installation of more roundabouts for intersection control, which has led to approximately 15 completed roundabouts and an additional 20 still under design or construction. SCDOT has also standardized backplates with retroreflective borders and LED signal indications for all new or modernized traffic signals.



Reflectorized backplates during the day (left) and at night (right). Source: SCDOT.

To implement all countermeasure packages at all locations outlined in the ISIP represents an investment of approximately \$30 million beyond currently-programmed intersection safety projects over a five-year period—or \$6 million annually. Over the last three-year period, from 2012 to 2014, SCDOT allocated nearly 40 percent of its Highway Safety Improvement Program funding to address safety issues at intersections with improvements such as roundabouts, left-turn lanes, and other geometric and traffic control improvements.

Expected Outcome

As part of the FHWA Evaluation of Low-Cost Safety Improvements Pooled Fund Study, an evaluation is currently being conducted to develop crash modification factors (CMFs) for the countermeasure packages implemented at both stop-controlled and signalized intersections. The CMFs will serve to compute an expected number of crashes after implementing a given countermeasure at a specific site². The preliminary findings of the evaluations indicate the enhancements at stop-controlled intersections are expected to have an 8-percent reduction in total crashes and a 15-percent reduction in nighttime crashes. The enhancements at signalized intersections are expected to have an 11-percent reduction in fatal plus injury crashes and a 12-percent decrease in angle crashes.

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² FHWA. *CMF Clearinghouse*. U.S. Department of Transportation. Federal Highway Administration. <http://www.cmfclearinghouse.org/>.

